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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,669	02/04/2004	Yoo-shin Lee	P2072US	3595

8968 7590 03/07/2008

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EXAMINER	
WANG, KENT F	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
03/07/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/771,669	LEE ET AL.	
	Examiner	Art Unit	
	KENT WANG	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments, filed on 12/18/2007, have been entered and made of record. Claims 1-20 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. Claims 1-7, 12-13, 15-18, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer US 6,946,817 in view of Kim, US 6,025,698.

Regarding claim 1, Fischer discloses an apparatus for charging a battery of a portable electronic device (mobile communication device) connected to a computer by USB port, the apparatus transferring power from the computer through the USB port, the apparatus comprising:

- a control portion (microprocessor 20, Fig 5) to generate charge control signals (soft-disconnect signal 212, Fig 3 and charge configuration signals 214, Fig 5) corresponding to a battery selected according to a battery selection signal that is externally input (see col. 6, lines 13-20); and

- a charging portion (charging subsystem 16, Fig 5) to charge the selected battery according to the charge control signals (charge configuration signals 214) from the control portion (microprocessor 20) (col. 6, line 60 to col. 7, line 23 and Fig 5).

Fischer does not disclose the apparatus comprising the battery selection signal distinguishing the battery and a transistor externally connected to the charging portion. However, Kim discloses the battery selection signal (battery identifying signals TS, Fig 5) distinguishing the battery from a plurality of batteries installable in the portable electronic device (battery identifying signals TS are utilized to identify the types of batteries) and a transistor (transistor 154, Fig 9) externally connected to the charging portion (smart battery charger 60, Fig 8), the transistor (154) and the charging portion (60) cooperating to charge the battery according to the charge control signals (level charge signal) from generated by the control portion (PWM controller 11, Fig 7) (col. 9, lines 24-35, col. 11, line 62 to col. 12, line 10, and col. 13, line 58 to col. 14, line 55).

At the time of the invention, it would have been obvious to a person of the ordinary skill in the art to combine kim's battery identifying signals and transistor into Fischer's charging device. The suggestion/motivation would be to provide the ability to control the battery charging means by identifying the types of smart batteries based on the battery identifying signals obtained from the charge signal generating means thus charging the battery stably and optimally (col. 3, line 49 to col. 4, line 6).

Regarding claim 2, Fischer discloses the charge control signals of the control portion comprise a charge start signal (soft-disconnect signal 212, Fig 3) to enable output of the

charging portion (causes the soft-disconnect switch 202 to reset, disconnect and reconnect) (see col. 6, lines 21-34 and Fig 3).

Regarding claim 3, Fischer discloses the charge control signals of the control portion comprise a battery type signal (charge configuration signals 214) to control an output voltage level according to the battery selection signal (controls the power supplied by the charging subsystem 16 to the rechargeable battery 18) (see col. 6, lines 21-34 and Fig 3).

Regarding claim 4, Fischer discloses the charge control signals of the control portion (the control signal from charge current controller 408) comprise a charge voltage control signal (monitor the voltage level) and a charge current control signal (control the amount of current), which are generated based on the detection of a charge current and a charge voltage from the charging portion (charge current controller 408, Fig 5), to control the charge current and the charge voltage (battery voltage curve 610 and battery current curve 620, Fig 7) (col. 7, lines 55-67).

Regarding claim 5, Fischer discloses a USB controller for controlling bidirectional data transmission (request capability 1320 and report capability 1340, Fig 12B) between the computer and the portable electronic device (the transmission of request and report data between the mobile device and the USB host, col. 14, lines 26-39 and Figs 12A and 12B).

Regarding claim 6, Fischer discloses the battery selection signal is input by a user (a mobile device user, see col. 2, line 58 to col. 3 line 4).

Regarding claim 7, Fischer discloses the battery selection signal is input by a battery recognition apparatus (keyboard 34 or auxiliary I/O 40, Fig 1) (col. 3, lines 44-61 and Fig 1).

Regarding claim 12, Fischer discloses a USB cable for transferring power from a USB receptacle to a portable electronic device (mobile communication device) with a power and data port, a battery and a device controller, the USB cable comprising:

- a first connector (a port at USB interface 12, Fig 1) configured to mate with the USB port (col. 2, lines 30-38);
- a second connector (a port at charging subsystem 16, Fig 1) configured to mate with the power and data port (col. 2, lines 39-47);
- at least two wires (Vbus 24 and data 26, Fig 1) electrically connecting the first (a port at USB interface 12) and second connectors (a port at charging subsystem 16) (col. 2, lines 39-47); and
- a USB battery charger (a charging subsystem 16, Fig 1) enclosed within the second connector, the USB battery charger including a charging portion (charging current control 408) that communicates with the device controller (charging controller 402) for receiving at least one signal relative to the battery, the charging portion (charging current control 408) adjusting power received from the USB receptacle relative to the at least one signal (charge configuration signal 214) for charging the battery (col. 2 line 39 to col. 3, line 4).

Regarding claim 13, this claim recites same limitations as claim 2. Thus it is analyzed and rejected as previously discussed with respect to claim 2 above.

Regarding claim 15, Fischer discloses the control portion (charging current control 408, Fig 5) comprises the device controller (charging controller 402, Fig 5) (vol. 7, lines 41-67).

Regarding claims 16 and 17, these claims recite same limitations as claim 5. Thus they are analyzed and rejected as previously discussed with respect to claim 5 above.

Regarding claim 18, Fischer discloses the at least two wires (a Vbus power line 24 and a data line 26, Fig 1) comprises:

- a first portion (first end of a Vbus power line 24) that interconnects a data interface of the first connector (a port at USB interface 12, Fig 1) with the USB controller (USB controller 14, Fig 1); and
- a second portion (second end of a Vbus power line 24) that interconnects a power interface of the first connector (a port at USB interface 12, Fig 1) with the charging portion (charging subsystem 16, Fig 1) (col. 2, lines 40-57).

Regarding claim 20, Fischer discloses the charging portion (charging subsystem 16) comprises:

- a linear regulator (power supplies switch 414, Fig 5) for outputting power to the control portion (col. 7, lines 24-40 and col. 8, lines 10-51);
- a reference voltage generating portion (charge current control 408, Fig 5) for adjusting a voltage charging the battery (col. 7, lines 41-67); and
- a voltage/current regulator (a voltage regulator 412, Fig 5) including an attenuator, a current sense amplifier, a voltage regulation loop compensator and a current regulation loop compensator (col. 7, lines 24-40 and col. 8, lines 38-61).

4. Claims 8-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer in view Kim, and further in view of Sherman, US 6,507,172, and further in view of Misawa, US 7,113,220.

Regarding claim 8, Fischer discloses a mobile communication device connected to a computer by USB to charge a battery by receiving power from the computer through USB, the portable device comprising:

- a USB charger including a USB controller (USB controller 14, Fig 1) to transmit and receive data through a USB port of the computer, a control portion (microprocessor 20, Fig 1) to generate charge control signals corresponding to a battery selected according to a battery selection signal that is externally input, and a charging portion (charging subsystem 16, Fig 1) to charge the selected battery according to the charge control signals from the control portion (col. 2 lines 58-67 and col. 5, line 66 to col. 6, line 20, Fischer);
- a control portion (microprocessor 20, Fig 5) to control a charging operation of the charging portion (col. 3, lines 14-46, Fischer);
- and a main controller (charge controller 402, Fig 5) to transmit and receive data with the USB controller (Fig 5 and col. 7, lines 4-23, Fischer);

Kim discloses a battery recognition apparatus (smart battery charger 60, Fig 5) that distinguishes the battery from a plurality of batteries installable in the digital camera (battery identifying signals TS are utilized to identify the types of batteries) (col. 9, lines 24-35, Kim).

Kim and Fischer do not disclose a charging portion to charge the various types of batteries and a power converting portion to output a plurality of voltage levels. Sherman discloses a USB powered battery charger primarily intended for use in battery powered hand-held and other portable device (can be a digital camera) further comprising:

- a charging portion (charger 20, Fig 2) to charge at least one among the various types of batteries (adapted for charging other types of batteries; col. 2 lines 1-10, Sherman)
- and a power converting portion (linear regulator 32, Fig 3) to receive power from the battery that is charged by the charger and generate and output power having a plurality of voltage levels (col. 2, lines 44-63, Sherman).

Kim, Fischer, and Sherman do not explicitly disclose a mobile communication device/ hand-held portable device is a digital camera. Misawa discloses a digital camera (an imaging capturing apparatus 200, Fig 19) can be charged via a USB terminal (col. 16, lines 59-67 and Fig 19, Misawa).

At the time of the invention, it would have been obvious to a person of the ordinary skill in the art to combine Sherman's charger and linear regulator and Kim and Fischer's battery charging system into Misawa's imaging capturing apparatus. The suggestion/motivation would be to provide the ability to dissipate heat caused by high input voltage from USB supply voltage or from other supply voltage battery sources, thereby preventing the portable device from overheat or breakdown (col. 3, lines 26-43, Sherman) and allows a digital camera to be charged via a USB terminal (col. 16, lines 59-67, Misawa).

Regarding claim 9, Fischer discloses the charge control signals of the control portion comprise a charge start signal (soft-disconnect signal 212, Fig 3, Fischer) to enable output of the charging portion (causes the soft-disconnect switch 202 to reset, disconnect and reconnect) (see col. 6, lines 21-34 and Fig 3, Fischer).

Regarding claim 10, Fischer discloses the charge control signals of the control portion

comprise a battery type signal (charge configuration signals 214, Fischer) to control an output voltage level according to the battery selection signal (controls the power supplied by the charging subsystem 16 to the rechargeable battery 18, Fischer) (see col. 6, lines 21-34 and Fig 3, Fischer).

Regarding claim 11, Fischer discloses the charge control signals of the control portion (the control signal from charge current controller 408, Fig 5, Fischer) comprise a charge voltage control signal (monitor the voltage level) and a charge current control signal (control the amount of current), which are generated based on the detection of a charge current and a charge voltage from the charging portion (charge current controller 408, Fig 5, Fischer), to control the charge current and the charge voltage (battery voltage curve 610 and battery current curve 620, Fig 7, Fischer) (col. 7, lines 55-67, Fischer).

5. Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer in view of Odaohhara, US 6,424,123.

Regarding claim 14, note the discussion of claim 12 above. Fischer does not teach the control portion comprises a PWM module. However, Odaohhara teaches the control portion comprises a PWM module (PWM controller 112, Fig 4, Odaohhara) for outputting at least one of a voltage control signal (voltage control signal CS2, Fig 4) and a current control signal (charge control signal CS1, Fig 4) (vol. 8, lines 26-34, vol. 9, lines 18-26, and Fig 4, Odaohhara).

It would have been obvious to one of ordinary skill in the art at the time this invention was made to have used a PWM controller as taught by Odaohhara as modified by Fischer so

that it can minimizing duty cycle to optimize efficiency of matching the reference voltage and boost current delivery (col. 9, lines 3-26, Odaohhara).

6. Claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Fischer in view of Hsu, US 6,798,173.

Regarding claim 19, note the discussion of claim 12 above. Fischer does not teach the first portion comprises a twisted-pair cable. However, Hsu teaches the first portion comprises a twisted-pair cable (col. 3, lines 10-52, Hsu).

It would have been obvious to one of ordinary skill in the art at the time this invention was made to have used a twisted-pair cable as taught by Hsu as modified by Fischer so that it can fitting the data transfer rates of USB and maximum length limitation and further canceling out electromagnetic interference, electromagnetic radiation and crosstalk between neighboring pairs (col. 3, lines 10-52, Hsu).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to

37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kent Wang whose telephone number is 571-270-1703. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-270-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KW / TH
27 February 2008

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER